

EXHIBIT B

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU2005/000467

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl. ⁷: C12N 15/29, 15/52

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

DGENE, GenBank, Swissprot, sp-Trembl: Sequence ID no. 1

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|---|-----------------------|
| A | US 5932713 A (Kasukabe et al) 3 August 1999 | |
| A | SUO, J. et al (2003) "Identification of <i>GhMYB109</i> encoding a R2R3 MYB transcription factor that expressed specifically in fiber initials and elongating fibers of cotton (<i>Gossypium hirsutum</i> L.)" <i>Biochimica et Biophysica Acta</i> 1630: 25-34. | |
| A | JL, S-J. et al (2003) "Isolation and analysis of genes preferentially expressed during early cotton fiber development by subtractive PCR and cDNA array" <i>Nucleic Acids Research</i> , 31(10): 2534-43. | |



Further documents are listed in the continuation of Box C



See patent family annex

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search
18 May 2005

Date of mailing of the international search report
25 MAY 2005

Name and mailing address of the ISA/AU

AUSTRALIAN PATENT OFFICE
PO BOX 200, WODEN ACT 2606, AUSTRALIA
E-mail address: pct@ipaustalia.gov.au
Facsimile No. (02) 6285 3929

Authorized officer

PHILIPPA WYRDEMAN

Telephone No : (02) 6283 2554

Applicants: Yingru Wu, et al.
U.S. Serial No. NOT YET KNOWN
Filed: Herewith (as §371 national stage
of PCT/AU2005/000467)
Exhibit B

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU2005/000467

Supplemental Box Continuation of Box III

(To be used when the space in any of Boxes I to VIII is not sufficient)

The international application does not comply with the requirements of unity of invention because it does not relate to one invention or to a group of inventions so linked as to form a single general inventive concept. The fundamental test for unity of invention is specified in Rule 13.2 of the Regulations under the PCT.

"Where a group of inventions is claimed in one and the same international application, the requirement of unity of invention referred to in Rule 13.1 shall be fulfilled only where there is a technical relationship among those inventions involving one or more of the same or corresponding special technical features. The expression "special technical feature" shall mean those technical features that define a contribution which each of the claimed inventions, considered as a whole, make over the prior art."

The problem addressed by the application is a need for the identification and characterization of genes involved in the fibre initiation in fibre producing plants such as cotton. The solution provided by the claims resides in the identification and partial characterisation of 16 such genes that code for the proteins defined by Sequence IDs 1-16 (see Key to Sequence Listing at page 17 of the description) and methods of using these sequences to alter fibre development. The general concept underlying the application appears to reside in the polypeptides and nucleotides encoding proteins that play some role in fibre initiation or elongation. The solution provided by the claims is directed to polypeptides (and the genes encoding these) that regulate fibre initiation and/or elongation and the use of these to alter fibre development. However, these concepts are not a new concept as can be seen, for example, from the following documents:

Jl, S-J. et al (2003) "Isolation and analysis of genes preferentially expressed during early cotton fiber development by subtractive PCR and cDNA array" *Nucleic Acids Research*, 31(10): 2534-43.

SUO, J. et al (2003) "Identification of *GhMYB109* encoding a R2R3 MYB transcription factor that expressed specifically in fiber initials and elongating fibers of cotton (*Gossypium hirsutum* L.)" *Biochimica et Biophysica Acta* 1630: 25-34.

US 5932713 A (Kasukabe et al) 3 August 1999

These documents disclose polypeptides and their genes that are involved in the regulation of fibre initiation and/or elongation and/or the use of such genes to alter fibre development. The protein groups do share the feature of being from the plant species *Gossypium hirsutum*. However the species of origin can only constitute a special technical feature if the species or origin makes a contribution over the prior art. There is nothing in the application to indicate that isolation of peptides from cotton is inventive. It was known that fibre regulatory genes would be present in cotton and how to go about identifying them. Since there is no obvious special technical feature, it is appropriate to use the Markush approach to analyse the situation.

The application of the test for Markush claims gives the following result:

- (A) the common property is regulation of fibre initiation and/or elongation in plants.
- (B) (1) no common structure is evident as the structures of the polypeptides are not revealed
- (B) (2) there is no single recognised class of compounds embracing all the polypeptides, as the polypeptides appear to belong to different classes. Each of the 16 polypeptides has a different function (where the polypeptide has been characterised at all – note GhFU1 and GhFU2 that are considered unknown and thus have no identified function). It is contrary to normal classification to group together such different polypeptides.

The species of origin of the polypeptides does not provide a legitimate classification as proteins are primarily classified by their activity not their origin. Thus the polypeptides can be grouped into 16 classes based on their activities. These classes of proteins represent 16 different inventions.

Continued in supplemental box

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU2005/000467

Supplemental Box

(To be used when the space in any of Boxes I to VIII is not sufficient)

Continuation of Box No: III

Furthermore, not all inventions can be searched without significant additional effort.

The applicant has chosen not to pay additional fees and thus this International Search Authority has restricted the search to the molecule GhHD1 (Sequence ID no. 1).

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/AU2005/000467

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

| Patent Document Cited in Search Report | | Patent Family Member | |
|---|---------|----------------------|---------|
| US | 5932713 | JP | 3313964 |
| | | JP | 3313964 |

Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.

END OF ANNEX

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

| | | |
|--|--|--|
| Applicant's or agent's file reference 503310 | FOR FURTHER ACTION <div style="text-align: right;">see Form PCT/ISA/220 as well as, where applicable, item 5 below.</div> | |
| International application No. PCT/AU2005/000467 | International filing date (<i>day/month/year</i>) 31 March 2005 | (Earliest) Priority Date (<i>day/month/year</i>) 31 March 2004 |
| Applicant COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION et al | | |

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of **8** sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

I. Basis of the report

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. ☒ With regard to any nucleotide and/or amino acid sequence disclosed in the international application, see Box No. I.

2. ☐ Certain claims were found unsearchable (See Box No. II).

3. ☒ Unity of invention is lacking (See Box No. III).

4. With regard to the title,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

☐ the text is approved as submitted by the applicant.

☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the drawings,

- a. the figure of the drawings to be published with the abstract is Figure No.

☐ as suggested by the applicant.

☐ as selected by this Authority, because the applicant failed to suggest a figure.

☐ as selected by this Authority, because this figure better characterizes the invention.

- b. ☒ none of the figures is to be published with the abstract.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU2005/000467

Box No. I Nucleotide and/or amino acid sequence(s) (Continuation of item 1.b of the first sheet)

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, the international search was carried out on the basis of:

a. type of material

☒ a sequence listing

☐ table(s) related to the sequence listing

b. format of material

☐ in written format

☒ in computer readable form

c. time of filing/furnishing

☐ contained in the international application as filed

☒ filed together with the international application in computer readable form

☐ furnished subsequently to this Authority for the purposes of search

2. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

3. Additional comments:

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU2005/000467

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
See extra sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-27, 45 and 61-84 in part, in so far as they relate to GhHD1 (seq ID no. 1 and 17)

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU2005/000467

Box No. IV Text of the Abstract (Continuation of Item 5 of the first sheet)

The present invention provides polypeptides, and polynucleotides encoding therefore, involved in the regulation of fibre initiation and/or elongation in fibre producing plants. In particular, the present invention provides methods of altering fibre initiation in cotton making use of transcription factors, regulatory proteins or cell cycle proteins produced at or around anthesis. The invention also relates to the use of these as markers or fibre production in plants including cotton.